

# PATENT ABSTRACTS OF JAPAN

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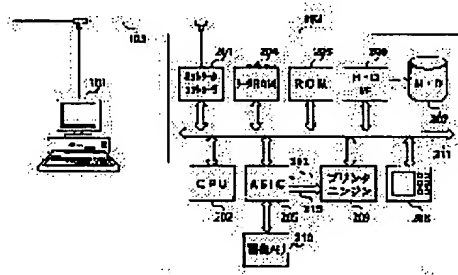
(72)Inventor : ONISHI TETSUYA

## (54) METHOD AND PROCESSOR OF INFORMATION PROCESSING AND STORAGE MEDIUM

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To efficiently use a storage means which is used as an electronic sorter by comparing the data amounts of an information file described in a specific language, an intermediate-language file generated at the time of expansion into raster image information, and an information file expanded into the raster image information and storing the file having the smallest amount.

**SOLUTION:** A document generated by a host computer 101 is converted to file information described in a page description language and transferred to a network printer 102. Of the network printer 102, an image controller(ASIC) 205 expands the information file described in the page description language into raster image information. A CPU 202 compares the data amounts of the information file described in the page description language, the intermediate- language file generated at the time of expansion into the raster image information, and the information file expanded into the raster image information are compared and the smallest file is stored on a hard disk 207.



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**CLAIMS**

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[Claim(s)]

[Claim 1] The storing process which stores information in a storing means, and the expansion process which develops the information file described in predetermined language to raster image information, The comparison process which measures each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language, and said raster image information, and the information file developed to said raster image information, The information processing approach characterized by having the control process controlled so that \*\*\*\*\* of said comparison process also stores a small file in said storing means.

[Claim 2] Said information is the information processing approach according to claim 1 characterized by being an image.

[Claim 3] Said storing means is the information processing approach according to claim 1 characterized by being a hard disk.

[Claim 4] Said predetermined language is the information processing approach according to claim 1 characterized by being a Page Description Language.

[Claim 5] A storing means to store information, and an expansion means to develop the information file described in predetermined language to raster image information, A comparison means to measure each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language, and said raster image information, and the information file developed to said raster image information, The information processor characterized by having the control means controlled so that \*\*\*\*\* of said comparison means also stores a small file in said storing means.

[Claim 6] Said information is an information processor according to claim 5 characterized by being an image.

[Claim 7] Said storing means is an information processor according to claim 5 characterized by being a hard disk.

[Claim 8] Said predetermined language is an information processor according to claim 5 characterized by being a Page Description Language.

[Claim 9] Said information processor is an information processor according to claim 5 characterized by being a printer.

[Claim 10] It is the storage which stores the control program for controlling an information processor. Store information in a storing means and the information file described in predetermined language is developed to raster image information. Each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language and said raster image information, and the information file developed to said raster image information is measured. The storage characterized by storing the control program which has the control module of a step controlled to store the smallest file in said storing means as a result of the comparison.

[Claim 11] Said information is a storage according to claim 10 characterized by being an image.

[Claim 12] Said storing means is a storage according to claim 10 characterized by being a hard disk.

[Claim 13] Said predetermined language is a storage according to claim 10 characterized by being a Page Description Language.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the storage which stored the control program for controlling this information processor in the information processing approach and the equipment list.

[0002]

[Description of the Prior Art] In recent years, a network progresses, the printer which is an information processor is also incorporated into a network from a local printer, and two or more users can share one set of a printer now. The network printer incorporating a big sorter is also put on the market under such an environment in the commercial scene. Moreover, a print image is stored using a memory medium like a hard disk, and the printer which equipped the electronic sorter which gave the role of a sorter is also proposed.

[0003]

[Problem(s) to be Solved by the Invention] However, if it is in the conventional example mentioned above, the image file described by the Page Description Language is developed in a raster image image, and the expansion image is stored in a memory medium. For example, the raster image image with many white fields and the raster image image with much change needed the same memory area, and had the trouble that a limited memory medium could not be used effectively.

[0004] When this invention is made in view of such a trouble that the Prior art mentioned above has and is made into the 1st purpose, it tends to offer the information processing approach and equipment which enabled it to aim at a deployment of a storage means to use as an electronic sorter.

[0005] Moreover, the place made into the 2nd purpose of this invention tends to offer the storage which stored the control program which can control smoothly the information processor of this invention mentioned above.

[0006]

[Means for Solving the Problem] In order to attain the 1st purpose of the above the information processing approach according to claim 1 The storing process which stores information in a storing means, and the expansion process which develops the information file described in predetermined language to raster image information, The comparison process which measures each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language, and said raster image information, and the information file developed to said raster image information, It is characterized by having the control process controlled so that \*\*\*\*\* of said comparison process also stores a small file in said storing means.

[0007] Moreover, in order to attain the 1st purpose of the above, the information processing approach according to claim 2 is characterized by said information being an image in the information processing approach according to claim 1.

[0008] Moreover, in order to attain the 1st purpose of the above, the information processing approach according to claim 3 is characterized by said storing means being a hard disk in the information processing approach according to claim 1.

[0009] Moreover, in order to attain the 1st purpose of the above, the information processing

approach according to claim 4 is characterized by said predetermined language being a Page Description Language in the information processing approach according to claim 1.

[0010] In order to attain the 1st purpose of the above moreover, an information processor according to claim 5 A storing means to store information, and an expansion means to develop the information file described in predetermined language to raster image information, A comparison means to measure each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language, and said raster image information, and the information file developed to said raster image information, It is characterized by having the control means controlled so that \*\*\*\*\* of said comparison means also stores a small file in said storing means.

[0011] Moreover, in order to attain the 1st purpose of the above, an information processor according to claim 6 is characterized by said information being an image in an information processor according to claim 5.

[0012] Moreover, in order to attain the 1st purpose of the above, an information processor according to claim 7 is characterized by said storing means being a hard disk in an information processor according to claim 5.

[0013] Moreover, in order to attain the 1st purpose of the above, an information processor according to claim 8 is characterized by said predetermined language being a Page Description Language in an information processor according to claim 5.

[0014] Moreover, in order to attain the 1st purpose of the above, an information processor according to claim 9 is characterized by said information processor being a printer in an information processor according to claim 5.

[0015] In order to attain the 2nd purpose of the above moreover, a storage according to claim 10 It is the storage which stores the control program for controlling an information processor. Store information in a storing means and the information file described in predetermined language is developed to raster image information. Each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language and said raster image information, and the information file developed to said raster image information is measured. It is characterized by storing the control program which has the control module of a step controlled to store the smallest file in said storing means as a result of the comparison.

[0016] Moreover, in order to attain the 2nd purpose of the above, a storage according to claim 11 is characterized by said information being an image in a storage according to claim 10.

[0017] Moreover, in order to attain the 2nd purpose of the above, a storage according to claim 12 is characterized by said storing means being a hard disk in a storage according to claim 10.

[0018] Furthermore, in order to attain the 2nd purpose of the above, a storage according to claim 13 is characterized by said predetermined language being a Page Description Language in a storage according to claim 10.

[0019]

[Embodiment of the Invention] Hereafter, the gestalt of 1 operation of this invention is explained based on a drawing.

[0020] Drawing 1 is the block diagram showing the configuration of the information processing system possessing the information processor concerning the gestalt of 1 operation of this invention, in this drawing, it is the network printer which is the information processor which 101 requires for a host computer and 102 requires for the gestalt of 1 operation of this invention, and these host computers 101 and a network printer 102 are connected by the respectively high-speed network 103. And in case a network 103 is specified from a host computer 101 and a printed output is obtained, the edited document is changed into the file described by the Page Description Language, and can be transmitted to a network printer 102 through a network 103. Moreover, although mentioned later for details, a direct output is carried out to the printer engine 209 of a network printer 102, or a temporary storage is carried out to a hard disk (H-D) 207, and a printed output can also be obtained when convenient. The driver software installed in the host computer 101 is performing selection of these file translation and printed outputs.

[0021] A network printer 102 is the network controller 201, CPU (arithmetic and program control) 202 and ROM (read only memory)203, work pieces RAM (random access memory)204 and ASIC (image controller)205, and H-D. I/F (hard disk interface)206, H-D (hard disk)207, a control unit

208, printer engine 209, and an image memory 210 are used as the component.

[0022] The network controller 201 is controlling the protocol for connecting with a network 103 and receiving the data from a host computer 101. CPU202 manages control of the network printer 102 whole. ROM203 stores the control program which CPU202 performs. A work piece RAM 204 functions also as a work area of CPU202 while storing various kinds of information. ASIC205 develops a raster image image to an image memory 210 based on the file described by the Page Description Language, and has the function to transmit an expansion image based on the synchronizing signal from printer engine 209. In addition, about the detail of this ASIC205, it mentions later. H-D I/F206 controls H-D207. H-D207 carries out the temporary storage of the image file. A control unit 208 can perform various actuation from the exterior, or can display various information, such as error information, now. The printer section is driven, it connects with ASIC205 through the video bus 213, and printer engine 209 outputs a synchronizing signal. An image memory 210 is connected to ASIC205, and a raster image image is developed.

[0023] The network controller 201, CPU202 and ROM203, work pieces RAM204 and ASIC205, H-D I/F206, H-D207, a control unit 208, and printer engine 209 are connected to the CPU bus 211, respectively.

[0024] Next, actuation of the system of the above-mentioned configuration is explained.

[0025] From a host computer 101, the image file which immediate printing was directed and was described by the sent Page Description Language is received by the network controller 201, and a temporary storage is carried out to a work piece RAM 204 through CPU202. CPU202 is changed into the intermediate language which can use ASIC205 with reference to the Page Description Language data by which the temporary storage is carried out to the work piece RAM 204, and carries out sequential storing again at the work piece RAM 204.

[0026] CPU202 develops a raster image image to the image memory 210 at a high speed, referring to the intermediate language with which the image expansion initiation command is stored in delivery and ASIC205 by the work piece RAM 204 to ASIC205, after transform processing to intermediate language is completed. CPU202 will apply starting to delivery and this printer engine 209 for an invocation command to printer engine 209, if interruption of expansion termination of the image from ASIC205 is received. To this and coincidence, CPU202 sends a command to ASIC205, and waits for the synchronizing signal 212 from printer engine 209 as video outlet mode.

[0027] If printer engine 209 starts, although not illustrated, paper will be fed to a print sheet, and a Horizontal Synchronizing signal and a Vertical Synchronizing signal (it is hereafter described as a synchronizing signal 212 collectively) will occur, and it will be sent to ASIC205. ASIC205 will transmit the image developed by the image memory 210 to printer engine 209 one by one through the video bus 213, if a synchronizing signal 212 is inputted.

[0028] Next, the actuation which carries out the temporary storage of the image to H-D207 is explained.

[0029] Beforehand, in H-D207, a memory area (it is hereafter described as a memory box) is separately secured for two or more users of every, and the address for distinguishing each is assigned. As mentioned above, in case a user prints a document, he can choose whether an immediate printing output is obtained or a document is stored in the memory box given temporarily. This is to lap on an output tray, to be alike, if classification becomes complicated or forgets recovery of a printed output, and for loss etc. to arise more, when two or more users on a network 103 use one set of a network printer 102 (for example, when a printed output laps). By carrying out the temporary storage of the document to the given memory box, by enabling it to obtain a document at convenient idle time, it is devised so that convenience may be increased more. Moreover, in case the document stored in the memory box is taken out, it can specify from a host computer 101, or can specify also from the control unit 208 of a network printer 102.

[0030] Next, the procedure at the time of carrying out the temporary storage of the document to the memory box secured on H-D207 is explained.

[0031] The document by which creation edit was carried out with the host computer 101 is changed into the file described to have mentioned above by the Page Description Language, and is transmitted to a network printer 102 through a network 103. If the user, the command "carry out a temporary storage to a hard disk", and the memory box number 101, for example, a host computer, is having the memory box number 11 secured to coincidence apart from a print command at this

time, memory box No.11 will be published. A user can choose this now freely with a host computer 101.

[0032] Next, the flow of processing actuation inside a network printer 102 is explained based on the flow chart of drawing 2 and drawing 3.

[0033] First, in drawing 2, it interprets whether it stores in the memory box in H-D207 whether the command transmitted at step S201 is the usual print. And it judges whether it is usually a print at step S202, and when it is usually a print, after usually performing print actuation at step S209, this processing actuation is ended. Moreover, when it usually stores in the memory box instead of a print in said step S202, the availability of the assignment memory box in H-D207 is checked at step S203. And when it judges whether there is any availability of the assignment memory box in H-D207 at step S204 and there is no availability, after usually shifting to print actuation at step S210 and notifying that to a host computer 101, this processing actuation is ended.

[0034] Moreover, when there is an availability of the assignment memory box in H-D207 in said step S204, it is step S205 and stores in an assignment memory box with the image file described by the transmitted Page Description Language temporarily. The file name at this time is specified by the driver in a host computer 101, for example, is set to "file.P." Here, although "suffix .P" mentions later, "intermediate-language file .M" and "raster image file .I" are distinguished.

[0035] Next, when it judges whether there is other new jobs or a job from other host computers at step S206 and there is other new jobs or a job from other host computers, priority is given to a new job at step S211. The processing described below is using the idle time of the job of a network printer 102, and this is for attaining the increase in efficiency of whole processing. After completing processing at said step S206, it progresses to step S207. Moreover, in said step S206, when there is not other new jobs or a job from other host computers, it progresses to the direct step S207.

[0036] At this step S207, file.P in said step S205 is read from a work piece RAM 204, conversion to the intermediate language which can use ASIC205 is started, and a file name is set to "file.M." Since the page number of sheets and paper size of a raster image image which are developed are understood beforehand, the memory space of the raster image image after [ those information to ] expansion is computable. Then, efficient use of H-D207 is possible by step S208 comparing the memory space of the raster image image after "file.P", "file.M", and expansion, and storing the thing of the smallest capacity in H-D207.

[0037] Next, in drawing 3, step S212 compares the memory space for an assignment page of the raster image image after "file.P" and expansion, and when the memory space for an assignment page of the raster image image after expansion is smaller than the memory space of "file.P", it progresses to step S213. At this step S213, the memory space for an assignment page of the raster image image after "file.M" and expansion is measured, and when the memory space for an assignment page of the raster image image after expansion is smaller than the memory space of "file.M", it progresses to step S214. At this step S214, from "file.M" which is an intermediate-language file, a raster image image is developed in memory 210, and after changing for "file.P" in an assignment memory box through ASIC205 from memory 210 and storing as "file.I", this processing actuation is ended.

[0038] Moreover, when the memory space for an assignment page of the raster image image after expansion is larger than the memory space of "file.P" in said step S212, step S216 compares the memory space of "file.P" and "file.M." And when the memory space of "file.P" is smaller than the memory space of "file.M", after storing in an assignment memory box as "file.P" as it is at step S217, this processing actuation is ended.

[0039] Moreover, in said step S213, when the memory space for an assignment page of the raster image image after expansion is larger than the memory space of "file.M", after changing for "file.P" in an assignment memory box as "file.M" and storing at step S215, this processing actuation is ended.

[0040] Moreover, in said step S216, when the memory space of "file.P" is larger than the memory space of "file.M", it returns to said step S215, and after changing for "file.P" in an assignment memory box as "file.M" and storing, this processing actuation is ended.

[0041] Thus, using the idle time of a job, file format with least capacity is discovered and H-D207 by which a memory box is arranged is used effectively.



[0042] In case the file in a memory box is printed, a printed output is obtained by specifying that for which it asks among the files which specify a memory box from a control unit 208, and are stored. Of course, it can specify now also from a host computer 101. Moreover, in case a printed output is obtained, processing is changed by the suffix of the file read from a memory box. For example, when a suffix is [.P], it is read to a work piece RAM 204, and as mentioned above, the usual print processing is performed. Moreover, although it is read to a work piece RAM 204 when a suffix is [.M], transform processing of intermediate language is omitted and processing is performed. Furthermore, when a suffix is [.I], naturally it is read and printed on the image memory 210 as it is.

[0043]

[Effect of the Invention] As explained in full detail above, according to the information processing approach of this invention, and equipment, the effectiveness that a deployment of a storage means to use as an electronic sorter can be aimed at is done so.

[0044] Moreover, according to the storage of this invention, the effectiveness that control \*\*\*\*\* can do smoothly the information processor of this invention mentioned above is done so.

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**TECHNICAL FIELD**

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[Field of the Invention] This invention relates to the storage which stored the control program for controlling this information processor in the information processing approach and the equipment list.

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**PRIOR ART**

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[Description of the Prior Art] In recent years, a network progresses, the printer which is an information processor is also incorporated into a network from a local printer, and two or more users can share one set of a printer now. The network printer incorporating a big sorter is also put on the market under such an environment in the commercial scene. Moreover, a print image is stored using a memory medium like a hard disk, and the printer which equipped the electronic sorter which gave the role of a sorter is also proposed.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] As explained in full detail above, according to the information processing approach of this invention, and equipment, the effectiveness that a deployment of a storage means to use as an electronic sorter can be aimed at is done so.

[0044] Moreover, according to the storage of this invention, the effectiveness that control \*\*\*\*\* can do smoothly the information processor of this invention mentioned above is done so.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] However, if it is in the conventional example mentioned above, the image file described by the Page Description Language is developed in a raster image image, and the expansion image is stored in a memory medium. For example, the raster image image with many white fields and the raster image image with much change needed the same memory area, and had the trouble that a limited memory medium could not be used effectively. [0004] When this invention is made in view of such a trouble that the Prior art mentioned above has and is made into the 1st purpose, it tends to offer the information processing approach and equipment which enabled it to aim at a deployment of a storage means to use as an electronic sorter. [0005] Moreover, the place made into the 2nd purpose of this invention tends to offer the storage which stored the control program which can control smoothly the information processor of this invention mentioned above.

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**MEANS**

[Means for Solving the Problem] In order to attain the 1st purpose of the above the information processing approach according to claim 1 The storing process which stores information in a storing means, and the expansion process which develops the information file described in predetermined language to raster image information, The comparison process which measures each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language, and said raster image information, and the information file developed to said raster image information, It is characterized by having the control process controlled so that \*\*\*\*\* of said comparison process also stores a small file in said storing means.

[0007] Moreover, in order to attain the 1st purpose of the above, the information processing approach according to claim 2 is characterized by said information being an image in the information processing approach according to claim 1.

[0008] Moreover, in order to attain the 1st purpose of the above, the information processing approach according to claim 3 is characterized by said storing means being a hard disk in the information processing approach according to claim 1.

[0009] Moreover, in order to attain the 1st purpose of the above, the information processing approach according to claim 4 is characterized by said predetermined language being a Page Description Language in the information processing approach according to claim 1.

[0010] In order to attain the 1st purpose of the above moreover, an information processor according to claim 5 A storing means to store information, and an expansion means to develop the information file described in predetermined language to raster image information, A comparison means to measure each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language, and said raster image information, and the information file developed to said raster image information, It is characterized by having the control means controlled so that \*\*\*\*\* of said comparison means also stores a small file in said storing means.

[0011] Moreover, in order to attain the 1st purpose of the above, an information processor according to claim 6 is characterized by said information being an image in an information processor according to claim 5.

[0012] Moreover, in order to attain the 1st purpose of the above, an information processor according to claim 7 is characterized by said storing means being a hard disk in an information processor according to claim 5.

[0013] Moreover, in order to attain the 1st purpose of the above, an information processor according to claim 8 is characterized by said predetermined language being a Page Description Language in an information processor according to claim 5.

[0014] Moreover, in order to attain the 1st purpose of the above, an information processor according to claim 9 is characterized by said information processor being a printer in an information processor according to claim 5.

[0015] In order to attain the 2nd purpose of the above moreover, a storage according to claim 10 It is the storage which stores the control program for controlling an information processor. Store information in a storing means and the information file described in predetermined language is developed to raster image information. Each amount of data of the intermediate-language file

generated in case it develops to the information file described in said predetermined language and said raster image information, and the information file developed to said raster image information is measured. It is characterized by storing the control program which has the control module of a step controlled to store the smallest file in said storing means as a result of the comparison.

[0016] Moreover, in order to attain the 2nd purpose of the above, a storage according to claim 11 is characterized by said information being an image in a storage according to claim 10.

[0017] Moreover, in order to attain the 2nd purpose of the above, a storage according to claim 12 is characterized by said storing means being a hard disk in a storage according to claim 10.

[0018] Furthermore, in order to attain the 2nd purpose of the above, a storage according to claim 13 is characterized by said predetermined language being a Page Description Language in a storage according to claim 10.

[0019]

[Embodiment of the Invention] Hereafter, the gestalt of 1 operation of this invention is explained based on a drawing.

[0020] Drawing 1 is the block diagram showing the configuration of the information processing system possessing the information processor concerning the gestalt of 1 operation of this invention, in this drawing, it is the network printer which is the information processor which 101 requires for a host computer and 102 requires for the gestalt of 1 operation of this invention, and these host computers 101 and a network printer 102 are connected by the respectively high-speed network 103. And in case a network 103 is specified from a host computer 101 and a printed output is obtained, the edited document is changed into the file described by the Page Description Language, and can be transmitted to a network printer 102 through a network 103. Moreover, although mentioned later for details, a direct output is carried out to the printer engine 209 of a network printer 102, or a temporary storage is carried out to a hard disk (H-D) 207, and a printed output can also be obtained when convenient. The driver software installed in the host computer 101 is performing selection of these file translation and printed outputs.

[0021] A network printer 102 is the network controller 201, CPU (arithmetic and program control) 202 and ROM (read only memory) 203, work pieces RAM (random access memory) 204 and ASIC (image controller) 205, and H-D. I/F (hard disk interface) 206, H-D (hard disk) 207, a control unit 208, printer engine 209, and an image memory 210 are used as the component.

[0022] The network controller 201 is controlling the protocol for connecting with a network 103 and receiving the data from a host computer 101. CPU 202 manages control of the network printer 102 whole. ROM 203 stores the control program which CPU 202 performs. A work piece RAM 204 functions also as a work area of CPU 202 while storing various kinds of information. ASIC 205 develops a raster image image to an image memory 210 based on the file described by the Page Description Language, and has the function to transmit an expansion image based on the synchronizing signal from printer engine 209. In addition, about the detail of this ASIC 205, it mentions later. H-D I/F 206 controls H-D 207. H-D 207 carries out the temporary storage of the image file. A control unit 208 can perform various actuation from the exterior, or can display various information, such as error information, now. The printer section is driven, it connects with ASIC 205 through the video bus 213, and printer engine 209 outputs a synchronizing signal. An image memory 210 is connected to ASIC 205, and a raster image image is developed.

[0023] The network controller 201, CPU 202 and ROM 203, work pieces RAM 204 and ASIC 205, H-D I/F 206, H-D 207, a control unit 208, and printer engine 209 are connected to the CPU bus 211, respectively.

[0024] Next, actuation of the system of the above-mentioned configuration is explained.

[0025] From a host computer 101, the image file which immediate printing was directed and was described by the sent Page Description Language is received by the network controller 201, and a temporary storage is carried out to a work piece RAM 204 through CPU 202. CPU 202 is changed into the intermediate language which can use ASIC 205 with reference to the Page Description Language data by which the temporary storage is carried out to the work piece RAM 204, and carries out sequential storing again at the work piece RAM 204.

[0026] CPU 202 develops a raster image image to the image memory 210 at a high speed, referring to the intermediate language with which the image expansion initiation command is stored in delivery and ASIC 205 by the work piece RAM 204 to ASIC 205, after transform processing to

intermediate language is completed. CPU202 will apply starting to delivery and this printer engine 209 for an invocation command to printer engine 209, if interruption of expansion termination of the image from ASIC205 is received. To this and coincidence, CPU202 sends a command to ASIC205, and waits for the synchronizing signal 212 from printer engine 209 as video outlet mode. [0027] If printer engine 209 starts, although not illustrated, paper will be fed to a print sheet, and a Horizontal Synchronizing signal and a Vertical Synchronizing signal (it is hereafter described as a synchronizing signal 212 collectively) will occur, and it will be sent to ASIC205. ASIC205 will transmit the image developed by the image memory 210 to printer engine 209 one by one through the video bus 213, if a synchronizing signal 212 is inputted.

[0028] Next, the actuation which carries out the temporary storage of the image to H-D207 is explained.

[0029] Beforehand, in H-D207, a memory area (it is hereafter described as a memory box) is separately secured for two or more users of every, and the address for distinguishing each is assigned. As mentioned above, in case a user prints a document, he can choose whether an immediate printing output is obtained or a document is stored in the memory box given temporarily. This is to lap on an output tray, to be alike, if classification becomes complicated or forgets recovery of a printed output, and for loss etc. to arise more, when two or more users on a network 103 use one set of a network printer 102 (for example, when a printed output laps). By carrying out the temporary storage of the document to the given memory box, by enabling it to obtain a document at convenient idle time, it is devised so that convenience may be increased more. Moreover, in case the document stored in the memory box is taken out, it can specify from a host computer 101, or can specify also from the control unit 208 of a network printer 102.

[0030] Next, the procedure at the time of carrying out the temporary storage of the document to the memory box secured on H-D207 is explained.

[0031] The document by which creation edit was carried out with the host computer 101 is changed into the file described to have mentioned above by the Page Description Language, and is transmitted to a network printer 102 through a network 103. If the user, the command "carry out a temporary storage to a hard disk", and the memory box number 101, for example, a host computer, is having the memory box number 11 secured to coincidence apart from a print command at this time, memory box No.11 will be published. A user can choose this now freely with a host computer 101.

[0032] Next, the flow of processing actuation inside a network printer 102 is explained based on the flow chart of drawing 2 and drawing 3.

[0033] First, in drawing 2, it interprets whether it stores in the memory box in H-D207 whether the command transmitted at step S201 is the usual print. And it judges whether it is usually a print at step S202, and when it is usually a print, after usually performing print actuation at step S209, this processing actuation is ended. Moreover, when it usually stores in the memory box instead of a print in said step S202, the availability of the assignment memory box in H-D207 is checked at step S203. And when it judges whether there is any availability of the assignment memory box in H-D207 at step S204 and there is no availability, after usually shifting to print actuation at step S210 and notifying that to a host computer 101, this processing actuation is ended.

[0034] Moreover, when there is an availability of the assignment memory box in H-D207 in said step S204, it is step S205 and stores in an assignment memory box with the image file described by the transmitted Page Description Language temporarily. The file name at this time is specified by the driver in a host computer 101, for example, is set to "file.P." Here, although "suffix .P" mentions later, "intermediate-language file .M" and "raster image file .I" are distinguished.

[0035] Next, when it judges whether there is other new jobs or a job from other host computers at step S206 and there is other new jobs or a job from other host computers, priority is given to a new job at step S211. The processing described below is using the idle time of the job of a network printer 102, and this is for attaining the increase in efficiency of whole processing. After completing processing at said step S206, it progresses to step S207. Moreover, in said step S206, when there is not other new jobs or a job from other host computers, it progresses to the direct step S207.

[0036] At this step S207, file.P in said step S205 is read from a work piece RAM 204, conversion to the intermediate language which can use ASIC205 is started, and a file name is set to "file.M."



Since the page number of sheets and paper size of a raster image image which are developed are understood beforehand, the memory space of the raster image image after [ those information to ] expansion is computable. Then, efficient use of H-D207 is possible by step S208 comparing the memory space of the raster image image after "file.P", "file.M", and expansion, and storing the thing of the smallest capacity in H-D207.

[0037] Next, in drawing 3, step S212 compares the memory space for an assignment page of the raster image image after "file.P" and expansion, and when the memory space for an assignment page of the raster image image after expansion is smaller than the memory space of "file.P", it progresses to step S213. At this step S213, the memory space for an assignment page of the raster image image after "file.M" and expansion is measured, and when the memory space for an assignment page of the raster image image after expansion is smaller than the memory space of "file.M", it progresses to step S214. At this step S214, from "file.M" which is an intermediate-language file, a raster image image is developed in memory 210, and after changing for "file.P" in an assignment memory box through ASIC205 from memory 210 and storing as "file.I", this processing actuation is ended.

[0038] Moreover, when the memory space for an assignment page of the raster image image after expansion is larger than the memory space of "file.P" in said step S212, step S216 compares the memory space of "file.P" and "file.M." And when the memory space of "file.P" is smaller than the memory space of "file.M", after storing in an assignment memory box as "file.P" as it is at step S217, this processing actuation is ended.

[0039] Moreover, in said step S213, when the memory space for an assignment page of the raster image image after expansion is larger than the memory space of "file.M", after changing for "file.P" in an assignment memory box as "file.M" and storing at step S215, this processing actuation is ended.

[0040] Moreover, in said step S216, when the memory space of "file.P" is larger than the memory space of "file.M", it returns to said step S215, and after changing for "file.P" in an assignment memory box as "file.M" and storing, this processing actuation is ended.

[0041] Thus, using the idle time of a job, file format with least capacity is discovered and H-D207 by which a memory box is arranged is used effectively.

[0042] In case the file in a memory box is printed, a printed output is obtained by specifying that for which it asks among the files which specify a memory box from a control unit 208, and are stored. Of course, it can specify now also from a host computer 101. Moreover, in case a printed output is obtained, processing is changed by the suffix of the file read from a memory box. For example, when a suffix is [P], it is read to a work piece RAM 204, and as mentioned above, the usual print processing is performed. Moreover, although it is read to a work piece RAM 204 when a suffix is [M], transform processing of intermediate language is omitted and processing is performed. Furthermore, when a suffix is [I], naturally it is read and printed on the image memory 210 as it is.

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[Translation done.]

**\* NOTICES \***

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2.\*\*\* shows the word which can not be translated.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

**[Drawing 1]** It is the block diagram showing the configuration of the information processor concerning the gestalt of 1 operation of this invention.

**[Drawing 2]** It is the flow chart which shows the flow of actuation of the information processor concerning the gestalt of 1 operation of this invention.

**[Drawing 3]** It is the flow chart which shows the flow of actuation of the information processor concerning the gestalt of 1 operation of this invention.

**[Description of Notations]**

101 Host Computer

102 Network Printer (Information Processor)

103 Network

201 Network Controller

202 CPU (Arithmetic and Program Control)

203 ROM (Read Only Memory)

204 Work Piece ROM (Read Only Memory)

205 ASIC (Image Controller)

206 H-D I/F (Hard Disk Interface)

207 H-D (Hard Disk)

208 Control Unit

209 Printer Engine

210 Image Memory

211 CPU Bus

212 Synchronizing Signal

213 Video Bus

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**[Translation done.]**

\* NOTICES \*

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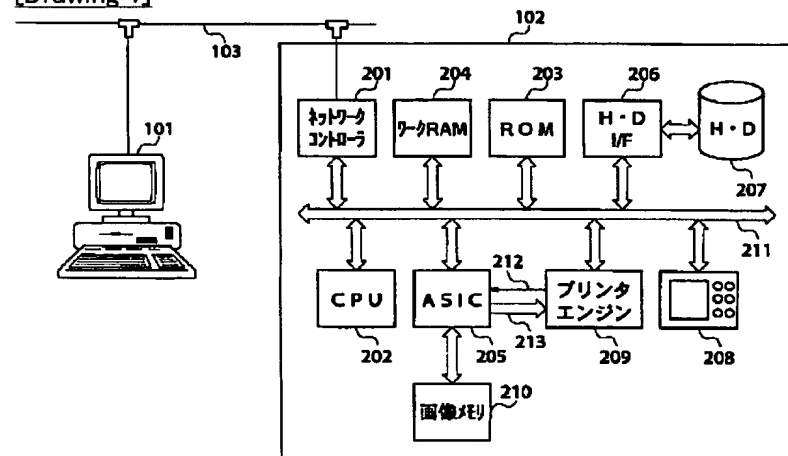
1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.\*\*\*\* shows the word which can not be translated.

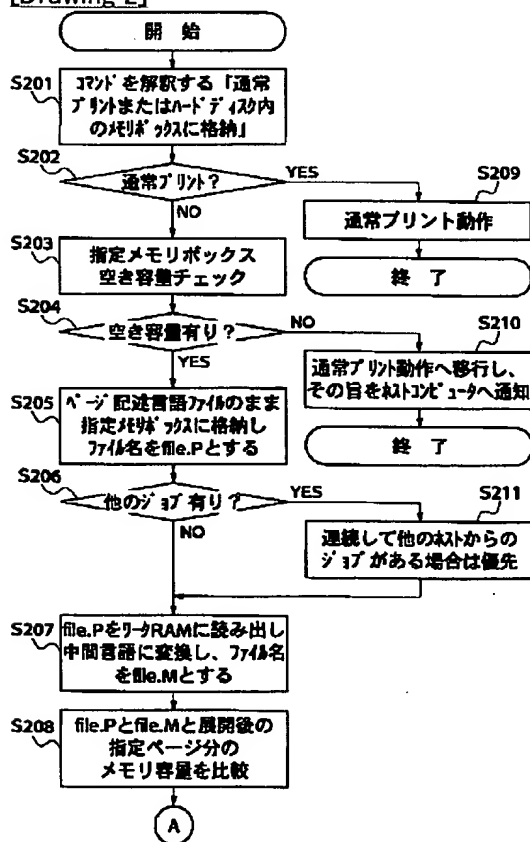
3.In the drawings, any words are not translated.

DRAWINGS

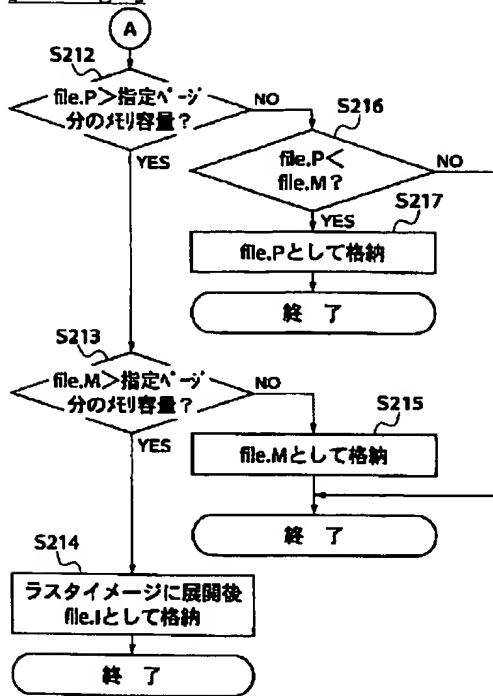
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]

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CORRECTION OR AMENDMENT

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[Procedure amendment]

[Filing Date] December 14, Heisei 13 (2001. 12.14)

[Procedure amendment 1]

[Document to be Amended] Description

[Item(s) to be Amended] The name of invention

[Method of Amendment] Modification

[Proposed Amendment]

[Title of the Invention] It is a storage to the information processing approach, equipment, a print control unit, and the printing approach list.

[Procedure amendment 2]

[Document to be Amended] Description

[Item(s) to be Amended] Claim

[Method of Amendment] Modification

[Proposed Amendment]

[Claim(s)]

[Claim 1] The information processing approach characterized by providing the following. The storing process which stores information in a storing means The expansion process which develops the information file described in predetermined language to raster image information The comparison process which measures each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language, and said raster image information, and the information file developed to said raster image information

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The control process controlled so that \*\*\*\*\* of said comparison process also stores a small file in said storing means

[Claim 2] Said information is the information processing approach according to claim 1 characterized by being an image.

[Claim 3] Said storing means is the information processing approach according to claim 1 characterized by being a hard disk.

[Claim 4] Said predetermined language is the information processing approach according to claim 1 characterized by being a Page Description Language.

[Claim 5] The information processor characterized by providing the following. A storing means to store information. An expansion means to develop the information file described in predetermined language to raster image information. A comparison means to measure each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language, and said raster image information, and the information file developed to said raster image information. The control means controlled so that \*\*\*\*\* of said comparison means also stores a small file in said storing means

[Claim 6] Said information is an information processor according to claim 5 characterized by being an image.

[Claim 7] Said storing means is an information processor according to claim 5 characterized by being a hard disk.

[Claim 8] Said predetermined language is an information processor according to claim 5 characterized by being a Page Description Language.

[Claim 9] Said information processor is an information processor according to claim 5 characterized by being a printer.

[Claim 10] It is the storage which stores the control program for controlling an information processor. Store information in a storing means and the information file described in predetermined language is developed to raster image information. Each amount of data of the intermediate-language file generated in case it develops to the information file described in said predetermined language and said raster image information, and the information file developed to said raster image information is measured. The storage characterized by storing the control program which has the control module of a step controlled to store the smallest file in said storing means as a result of the comparison.

[Claim 11] Said information is a storage according to claim 10 characterized by being an image.

[Claim 12] Said storing means is a storage according to claim 10 characterized by being a hard disk.

[Claim 13] Said predetermined language is a storage according to claim 10 characterized by being a Page Description Language.

[Claim 14] The 1st generation means which generates medium information based on the printed information described in the predetermined language received from the external device,

The 2nd generation means which generates raster image information based on said medium data,

A storing means to choose any one of said printed information, said medium information, or said the raster image information, and to store in memory,

The print control unit characterized by having the output means which carries out a printout based on the information stored in said memory.

[Claim 15] The 1st generation process which generates medium information based on the printed information described in the predetermined language received from the external device,

The 2nd generation process which generates raster image information based on said medium data,

The storing process which chooses any one of said printed information, said medium information, or said the raster image information, and is stored in memory,

The printing approach characterized by having the output process which carries out a printout based on the information stored in said memory.

[Procedure amendment 3]

[Document to be Amended] Description

[Item(s) to be Amended] 0001

[Method of Amendment] Modification

[Proposed Amendment]

[0001]

[Field of the Invention] This invention relates to a storage at the information processing approach, equipment, a print control unit, and the printing approach list.

[Procedure amendment 4]

[Document to be Amended] Description

[Item(s) to be Amended] 0004

[Method of Amendment] Modification

[Proposed Amendment]

[0004] When this invention is made in view of such a trouble that the Prior art mentioned above has and is made into the 1st object, it tends to offer the information processing approach, the equipment, print control unit, and the printing approach of having enabled it to aim at a deployment of a storage means to use as an electronic sorter.

[Procedure amendment 5]

[Document to be Amended] Description

[Item(s) to be Amended] 0018

[Method of Amendment] Modification

[Proposed Amendment]

[0018] Furthermore, in order to attain the 2nd object of the above, a storage according to claim 13 is characterized by said predetermined language being a Page Description Language in a storage according to claim 10. In order to attain the 1st object of the above moreover, a print control unit according to claim 14 The 1st generation means which generates medium information based on the printed information described in the predetermined language received from the external device, The 2nd generation means which generates raster image information based on said medium data, It is characterized by having a storing means to choose any one of said printed information, said medium information, or said the raster image information, and to store in memory, and the output means which carries out a printout based on the information stored in said memory. In order to attain the 1st object of the above moreover, the printing approach according to claim 15 The 1st generation process which generates medium information based on the printed information described in the predetermined language received from the external device, The 2nd generation process which generates raster image information based on said medium data, It is characterized by having the storing process which chooses any one of said printed information, said medium information, or said the raster image information, and is stored in memory, and the output process which carries out a printout based on the information stored in said memory.

[Procedure amendment 6]

[Document to be Amended] Description

[Item(s) to be Amended] 0043

[Method of Amendment] Modification

[Proposed Amendment]

[0043]

[Effect of the Invention] As explained in full detail above, according to the information processing approach, the equipment, print control unit, and the printing approach of this invention, the effectiveness that a deployment of a storage means to use as an electronic sorter can be aimed at is done so.

[Translation done.]



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(71)出願人 000001007

キヤノン株式会社

東京都大田区下丸子3丁目30番2号

(72)発明者 大西 哲也

東京都大田区下丸子3丁目30番2号 キヤ

ノン株式会社内

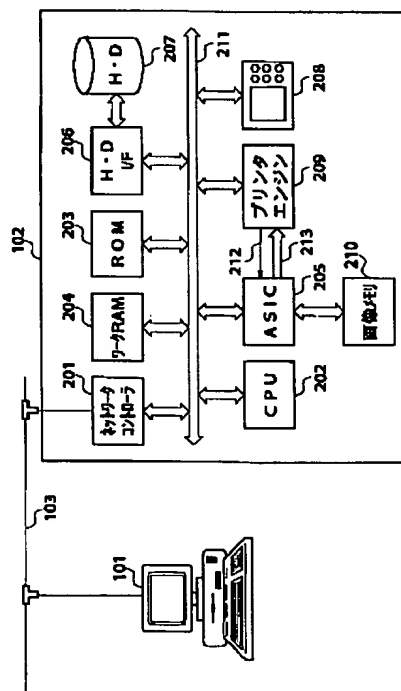
(74)代理人 弁理士 渡部 敏彦

(54)【発明の名称】 情報処理方法及び装置並びに記憶媒体

(57)【要約】

【課題】 電子ソータとして利用している記憶手段の有効利用が図れる情報処理方法及び装置を提供する。

【解決手段】 情報を格納するH・D（ハードディスク）207と、所定言語で記述された情報ファイルをラスタイメージ情報に展開するASIC（画像コントローラ）205と、前記所定言語で記述された情報ファイルと前記ラスタイメージ情報に展開する際に発生する中間言語ファイルと前記ラスタイメージ情報に展開した情報ファイルの各データ量を比較するCPU202と、前記CPU202の比較結果最も小さいファイルをH・D207に格納するように制御するCPU202とを有する。





## 【特許請求の範囲】

【請求項 1】 情報を格納手段に格納する格納工程と、所定言語で記述された情報ファイルをラスタイメージ情報に展開する展開工程と、前記所定言語で記述された情報ファイルと前記ラスタイメージ情報に展開する際に発生する中間言語ファイルと前記ラスタイメージ情報に展開した情報ファイルの各データ量を比較する比較工程と、前記比較工程の比較結果最も小さいファイルを前記格納手段に格納するように制御する制御工程とを有することを特徴とする情報処理方法。

【請求項 2】 前記情報は画像であることを特徴とする請求項 1 記載の情報処理方法。

【請求項 3】 前記格納手段はハードディスクであることを特徴とする請求項 1 記載の情報処理方法。

【請求項 4】 前記所定言語はページ記述言語であることを特徴とする請求項 1 記載の情報処理方法。

【請求項 5】 情報を格納する格納手段と、所定言語で記述された情報ファイルをラスタイメージ情報に展開する展開手段と、前記所定言語で記述された情報ファイルと前記ラスタイメージ情報に展開する際に発生する中間言語ファイルと前記ラスタイメージ情報に展開した情報ファイルの各データ量を比較する比較手段と、前記比較手段の比較結果最も小さいファイルを前記格納手段に格納するように制御する制御手段とを有することを特徴とする情報処理装置。

【請求項 6】 前記情報は画像であることを特徴とする請求項 5 記載の情報処理装置。

【請求項 7】 前記格納手段はハードディスクであることを特徴とする請求項 5 記載の情報処理装置。

【請求項 8】 前記所定言語はページ記述言語であることを特徴とする請求項 5 記載の情報処理装置。

【請求項 9】 前記情報処理装置はプリンタであることを特徴とする請求項 5 記載の情報処理装置。

【請求項 10】 情報処理装置を制御するための制御プログラムを格納する記憶媒体であって、情報を格納手段に格納し、所定言語で記述された情報ファイルをラスタイメージ情報に展開し、前記所定言語で記述された情報ファイルと前記ラスタイメージ情報に展開する際に発生する中間言語ファイルと前記ラスタイメージ情報に展開した情報ファイルの各データ量を比較し、その比較の結果、最も小さいファイルを前記格納手段に格納するように制御するステップの制御モジュールを有する制御プログラムを格納したことを特徴とする記憶媒体。

【請求項 11】 前記情報は画像であることを特徴とする請求項 10 記載の記憶媒体。

【請求項 12】 前記格納手段はハードディスクであることを特徴とする請求項 10 記載の記憶媒体。

【請求項 13】 前記所定言語はページ記述言語であることを特徴とする請求項 10 記載の記憶媒体。

【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、情報処理方法及び装置並びにこの情報処理装置を制御するための制御プログラムを格納した記憶媒体に関する。

## 【0002】

【従来の技術】近年、ネットワーク化が進み、情報処理装置であるプリンタも、ローカルプリンタからネットワークの中に組み込まれ、1 台のプリンタを複数のユーザが共用できるようになってきている。このような環境下、大きなソータを組み込んだネットワークプリンタも市場で発売されている。また、ハードディスクのようなメモリ媒体を用いてプリント画像を格納し、ソータの役割を持たせた電子ソータを装備したプリンタも提案されている。

## 【0003】

【発明が解決しようとする課題】しかしながら、上述した従来例にあっては、ページ記述言語で記述された画像ファイルをラスタイメージ画像に展開し、その展開画像をメモリ媒体に格納するようになっている。例えば、白い領域が多いラスタイメージ画像も、変化が多いラスタイメージ画像も同じメモリ領域を必要とし、限りあるメモリ媒体を有効に利用することができないという問題点があった。

【0004】本発明は上述した従来の技術の有するこのような問題点に鑑みてなされたものであり、その第 1 の目的とするところは、例えば電子ソータとして利用している記憶手段の有効利用を図ることができるようにした情報処理方法及び装置を提供しようとするものである。

【0005】また、本発明の第 2 の目的とするところは、上述した本発明の情報処理装置を円滑に制御することができる制御プログラムを格納した記憶媒体を提供しようとするものである。

## 【0006】

【課題を解決するための手段】上記第 1 の目的を達成するために請求項 1 記載の情報処理方法は、情報を格納手段に格納する格納工程と、所定言語で記述された情報ファイルをラスタイメージ情報に展開する展開工程と、前記所定言語で記述された情報ファイルと前記ラスタイメージ情報に展開する際に発生する中間言語ファイルと前記ラスタイメージ情報に展開した情報ファイルの各データ量を比較する比較工程と、前記比較工程の比較結果最も小さいファイルを前記格納手段に格納するように制御する制御工程とを有することを特徴とする。

【0007】また、上記第 1 の目的を達成するために請求項 2 記載の情報処理方法は、請求項 1 記載の情報処理方法において、前記情報は画像であることを特徴とする。

【0008】また、上記第 1 の目的を達成するために請求項 3 記載の情報処理方法は、請求項 1 記載の情報処理方法において、前記格納手段はハードディスクであるこ

とを特徴とする。

【0009】また、上記第1の目的を達成するために請求項4記載の情報処理方法は、請求項1記載の情報処理方法において、前記所定言語はページ記述言語であることを特徴とする。

【0010】また、上記第1の目的を達成するために請求項5記載の情報処理装置は、情報を格納する格納手段と、所定言語で記述された情報ファイルをラスティメージ情報に展開する展開手段と、前記所定言語で記述された情報ファイルと前記ラスティメージ情報に展開する際に発生する中間言語ファイルと前記ラスティメージ情報に展開した情報ファイルの各データ量を比較する比較手段と、前記比較手段の比較結果最も小さいファイルを前記格納手段に格納するように制御する制御手段とを有することを特徴とする。

【0011】また、上記第1の目的を達成するために請求項6記載の情報処理装置は、請求項5記載の情報処理装置において、前記情報は画像であることを特徴とする。

【0012】また、上記第1の目的を達成するために請求項7記載の情報処理装置は、請求項5記載の情報処理装置において、前記格納手段はハードディスクであることを特徴とする。

【0013】また、上記第1の目的を達成するために請求項8記載の情報処理装置は、請求項5記載の情報処理装置において、前記所定言語はページ記述言語であることを特徴とする。

【0014】また、上記第1の目的を達成するために請求項9記載の情報処理装置は、請求項5記載の情報処理装置において、前記情報処理装置はプリンタであることを特徴とする。

【0015】また、上記第2の目的を達成するために請求項10記載の記憶媒体は、情報処理装置を制御するための制御プログラムを格納する記憶媒体であって、情報を格納手段に格納し、所定言語で記述された情報ファイルをラスティメージ情報に展開し、前記所定言語で記述された情報ファイルと前記ラスティメージ情報に展開する際に発生する中間言語ファイルと前記ラスティメージ情報に展開した情報ファイルの各データ量を比較し、その比較の結果、最も小さいファイルを前記格納手段に格納するように制御するステップの制御モジュールを有する制御プログラムを格納したことを特徴とする。

【0016】また、上記第2の目的を達成するために請求項11記載の記憶媒体は、請求項10記載の記憶媒体において、前記情報は画像であることを特徴とする。

【0017】また、上記第2の目的を達成するために請求項12記載の記憶媒体は、請求項10記載の記憶媒体において、前記格納手段はハードディスクであることを特徴とする。

【0018】更に、上記第2の目的を達成するために請

求項13記載の記憶媒体は、請求項10記載の記憶媒体において、前記所定言語はページ記述言語であることを特徴とする。

【0019】

【発明の実施の形態】以下、本発明の一実施の形態を図面に基づき説明する。

【0020】図1は、本発明の一実施の形態に係る情報処理装置を具備した情報処理システムの構成を示すブロック図であり、同図において、101はホストコンピュータ、102は本発明の一実施の形態に係る情報処理装置であるネットワークプリンタであり、これらホストコンピュータ101とネットワークプリンタ102は、それぞれ高速なネットワーク103により接続されている。そして、ホストコンピュータ101からネットワーク103を指定し、プリント出力を得る際には、編集されたドキュメントを、ページ記述言語で記述されたファイルに変換し、ネットワーク103を介してネットワークプリンタ102に転送できるようになっている。また、詳細は後述するが、ネットワークプリンタ102のプリンタエンジン209に直接出力するか、ハードディスク(H・D)207に一時格納し、都合のよいときにプリント出力を得ることもできるようになっている。これらのファイル変換やプリント出力の選択は、ホストコンピュータ101にインストールされているドライバソフトが行っている。

【0021】ネットワークプリンタ102は、ネットワークコントローラ201、CPU(中央演算処理装置)202、ROM(リードオンリーメモリ)203、ワークRAM(ランダムアクセスメモリ)204、ASIC(画像コントローラ)205、H・D I/F(ハードディスクインタフェース)206、H・D(ハードディスク)207、操作部208、プリンタエンジン209及び画像メモリ210を構成要素としている。

【0022】ネットワークコントローラ201は、ネットワーク103に接続されてホストコンピュータ101からのデータを受けるためのプロトコルを制御している。CPU202は、ネットワークプリンタ102全体の制御を司るものである。ROM203は、CPU202が実行する制御プログラムを格納している。ワークRAM204は、各種の情報を格納すると共に、CPU202のワークエリアとしても機能する。ASIC205は、ページ記述言語で記述されたファイルに基づいて画像メモリ210にラスティメージ画像を展開し、プリンタエンジン209からの同期信号に基づいて展開画像を転送する機能を有している。なお、このASIC205の詳細については後述する。H・D I/F206は、H・D207をコントロールするものである。H・D207は、画像ファイルを一時格納するものである。操作部208は、外部から各種操作を行ったり、エラー情報等の各種情報を表示できるようになっている。プリンタ

エンジン209は、プリンタ部を駆動するもので、ビデオバス213を介してASIC205に接続され、同期信号を出力する。画像メモリ210は、ASIC205に接続されてラスタイメージ画像が展開されるものである。

【0023】ネットワークコントローラ201、CPU202、ROM203、ワークRAM204、ASIC205、H・D1/F206、H・D207、操作部208及びプリンタエンジン209は、それぞれCPUバス211に接続されている。

【0024】次に、上記構成のシステムの動作を説明する。

【0025】ホストコンピュータ101より直接プリントを指示され、送付されたページ記述言語によって記述された画像ファイルは、ネットワークコントローラ201により受け取られ、CPU202を介してワークRAM204に一時格納される。CPU202は、ワークRAM204に一時格納されているページ記述言語データを参照し、ASIC205が利用できる中間言語に変換し、再びワークRAM204に順次格納していく。

【0026】CPU202は、中間言語への変換処理が終了すると、ASIC205に対して画像展開開始コマンドを送り、ASIC205は、ワークRAM204に格納されている中間言語を参照しながら高速に画像メモリ210へラスタイメージ画像の展開を行う。CPU202は、ASIC205からの画像の展開終了の割り込みを受けると、プリンタエンジン209に対して起動コマンドを送り、このプリンタエンジン209に起動をかける。これと同時にCPU202は、ASIC205にコマンドを送ってビデオ出力モードとして、プリンタエンジン209からの同期信号212を待つ。

【0027】プリンタエンジン209が起動すると、図示しないが印刷用紙が給紙され、水平同期信号、垂直同期信号（以下、まとめて同期信号212と記述する）が発生し、ASIC205に送られる。ASIC205は、同期信号212が入力されると、画像メモリ210に展開されている画像を、ビデオバス213を介して順次プリンタエンジン209に転送する。

【0028】次に、H・D207に画像を一時格納する動作について説明する。

【0029】予めH・D207内に、複数のユーザ毎に個々にメモリ領域（以下、メモリボックスと記述する）を確保し、それぞれを区別するための番地を割り当ておく。ユーザは、前述したようにドキュメントをプリントする際、直接プリント出力を得るか、一時与えられたメモリボックスにドキュメントを格納するかを選択できるようになっている。これは、ネットワーク103上の複数のユーザが1台のネットワークプリンタ102を利用する場合、例えば、プリント出力が重なった場合、出力トレイ上で重なってしまい、仕分けが複雑になった

り、プリント出力の回収を忘れてしまうことにより紛失等が生じるためである。与えられたメモリボックスにドキュメントを一時格納することにより、都合のよい空き時間にドキュメントを得られるようにすることで、より利便性を増すように工夫されている。また、メモリボックスに格納されているドキュメントを取り出す際には、ホストコンピュータ101から指定したり、ネットワークプリンタ102の操作部208からも指定できるようになっている。

10 【0030】次に、H・D207上に確保されたメモリボックスにドキュメントを一時格納する際の手順について説明する。

【0031】ホストコンピュータ101で作成編集されたドキュメントは、前述したようにページ記述言語で記述されたファイルに変換されて、ネットワーク103を介してネットワークプリンタ102へ転送されるようになっている。このとき同時に、プリントコマンドとは別に、例えば、“ハードディスクに一時格納せよ”というコマンドと、メモリボックス番号、例えば、ホストコンピュータ101のユーザがメモリボックス番号11を確保されているならば、メモリボックスNo. 11が発行される。これは、ホストコンピュータ101にてユーザが自由に選択できるようになっている。

20 【0032】次に、ネットワークプリンタ102の内部での処理動作の流れを、図2及び図3のフローチャートに基づき説明する。

【0033】まず、図2において、ステップS201で転送されたコマンドが通常のプリントなのか、H・D207内のメモリボックスに格納するのかを解釈する。そして、ステップS202で通常プリントであるか否かを判断し、通常プリントである場合は、ステップS209で通常プリント動作を行った後、本処理動作を終了する。また、前記ステップS202において通常プリントではなく、メモリボックスに格納する場合は、ステップS203でH・D207内の指定メモリボックスの空き容量をチェックする。そして、ステップS204でH・D207内の指定メモリボックスの空き容量が有るか否かを判断し、空き容量が無い場合は、ステップS210で通常プリント動作に移行し、その旨をホストコンピュータ101に通知した後、本処理動作を終了する。

40 【0034】また、前記ステップS204においてH・D207内の指定メモリボックスの空き容量が有る場合は、ステップS205で、一時、転送されたページ記述言語で記述された画像ファイルのまま指定メモリボックスに格納する。このときのファイル名はホストコンピュータ101内のドライバで指定され、例えば、「file. P」となる。ここで、「サフィックス. P」は後述するが、「中間言語ファイル. M」と「ラスタイメージファイル. I」とを区別するものである。

50 【0035】次に、ステップS206で他の新たなジョ

ブ、もしくは他のホストコンピュータからのジョブが有るか否かを判断し、他の新たなジョブ、もしくは他のホストコンピュータからのジョブが有る場合は、ステップS211で新たなジョブを優先させる。これは、以下に述べる処理が、ネットワークプリンタ102のジョブの空き時間を利用することで、全体処理の効率化を図るためである。前記ステップS206での処理が終了後はステップS207へ進む。また、前記ステップS206において、他の新たなジョブ、もしくは他のホストコンピュータからのジョブが無い場合は、直接ステップS207へ進む。

【0036】このステップS207では、前記ステップS205におけるfile. PをワークRAM204から読み出し、ASIC205が利用できる中間言語への変換を開始し、ファイル名を「file. M」とする。展開されるラスタイメージ画像のページ枚数と用紙サイズは予め分かるので、それらの情報から展開後のラスタイメージ画像のメモリ容量は計算可能である。そこで、ステップS208で「file. P」と「file. M」と展開後のラスタイメージ画像のメモリ容量を比較し、最も少い容量のものをH・D207に格納することで、H・D207の効率的な利用が可能である。

【0037】次に、図3において、ステップS212で「file. P」と展開後のラスタイメージ画像の指定ページ分のメモリ容量を比較し、「file. P」のメモリ容量より展開後のラスタイメージ画像の指定ページ分のメモリ容量が小さい場合は、ステップS213へ進む。このステップS213では、「file. M」と展開後のラスタイメージ画像の指定ページ分のメモリ容量を比較し、「file. M」のメモリ容量より展開後のラスタイメージ画像の指定ページ分のメモリ容量が小さい場合は、ステップS214へ進む。このステップS214では、中間言語ファイルである「file. M」から、ラスタイメージ画像をメモリ210に展開し、「file. I」としてメモリ210からASIC205を介して、指定メモリボックス内の「file. P」と入れ替えて格納した後、本処理動作を終了する。

【0038】また、前記ステップS212において「file. P」のメモリ容量より展開後のラスタイメージ画像の指定ページ分のメモリ容量が大きい場合は、ステップS216で「file. P」と「file. M」のメモリ容量を比較する。そして、「file. P」のメモリ容量が「file. M」のメモリ容量より小さい場合は、ステップS217でそのまま「file. P」として指定メモリボックス内に格納した後、本処理動作を終了する。

【0039】また、前記ステップS213において、「file. M」のメモリ容量より展開後のラスタイメージ画像の指定ページ分のメモリ容量が大きい場合は、ステップS215で「file. M」として指定メモリ

ボックス内の「file. P」と入れ替えて格納した後、本処理動作を終了する。

【0040】また、前記ステップS216において、「file. P」のメモリ容量が「file. M」のメモリ容量より大きい場合は、前記ステップS215へ戻って「file. M」として指定メモリボックス内の「file. P」と入れ替えて格納した後、本処理動作を終了する。

【0041】このように、ジョブの空き時間を利用して、最も容量の少ないファイル形式を探し出し、メモリボックスが配置されるH・D207の有効利用を行っている。

【0042】メモリボックス内のファイルを印字する際には、例えば、操作部208よりメモリボックスを指定し且つ格納されているファイルのうち所望するものを指定することで、プリント出力が得られるようになっている。勿論、ホストコンピュータ101からも指定できるようになっている。また、プリント出力を得る際、メモリボックスから読み出されるファイルのサフィックスによって処理を変えている。例えば、サフィックスが「. P」の場合、ワークRAM204に読み出され、前述したように通常のプリント処理が行われる。また、サフィックスが「. M」の場合、ワークRAM204に読み出されるが、中間言語の変換処理が省略され、処理が行われる。更に、サフィックスが「. I」の場合には、当然そのまま画像メモリ210に読み出されてプリントされるようになっている。

#### 【0043】

【発明の効果】以上詳述したように本発明の情報処理方法及び装置によれば、電子ソータとして利用している記憶手段の有効利用が図れるという効果を奏する。

【0044】また、本発明の記憶媒体によれば、上述した本発明の情報処理装置を円滑に制御することができるという効果を奏する。

#### 【図面の簡単な説明】

【図1】本発明の一実施の形態に係る情報処理装置の構成を示すブロック図である。

【図2】本発明の一実施の形態に係る情報処理装置の動作の流れを示すフローチャートである。

【図3】本発明の一実施の形態に係る情報処理装置の動作の流れを示すフローチャートである。

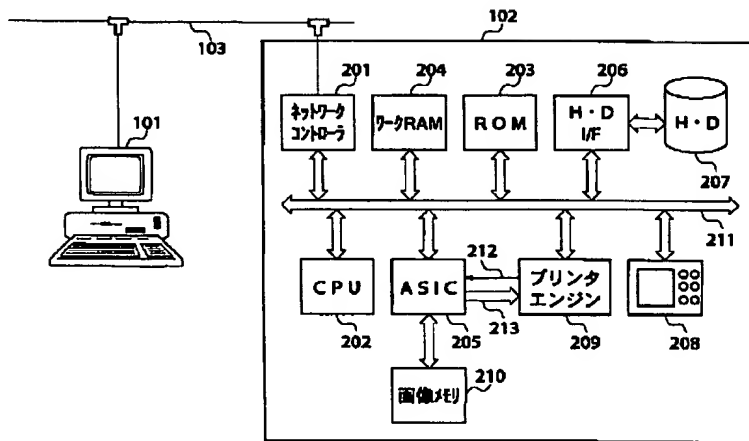
#### 【符号の説明】

- 101 ホストコンピュータ
- 102 ネットワークプリンタ（情報処理装置）
- 103 ネットワーク
- 201 ネットワークコントローラ
- 202 CPU（中央演算処理装置）
- 203 ROM（リードオンリーメモリ）
- 204 ワークROM（リードオンリーメモリ）
- 205 ASIC（画像コントローラ）

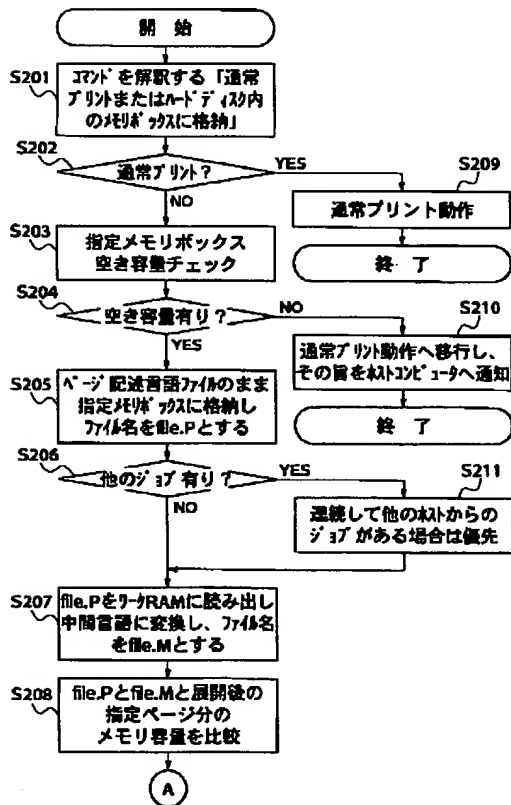
206 H・D I/F (ハードディスクインタフェース)  
 207 H・D (ハードディスク)  
 208 操作部  
 209 プリントエンジン

210 画像メモリ  
 211 CPUバス  
 212 同期信号  
 213 ビデオバス

【図1】



【図2】



【図3】

